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Goal specific social capital and job satisfaction Effects of different types of networks on instrumental and social aspects of work☆

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Abstract

This paper addresses the question "To what extent can job satisfaction be explained as the revenue of social capital?" By conceiving someone's social network as social capital we specify conditions under which social ties do lead to job satisfaction. We inquire into the idea of goal specificity of social capital, which implies that a network with a given structure and content will have different impacts on various aspects of job satisfaction. If the content of the ties and the structure of the network at the job engender material well-being or produce social approval, satisfaction with the corresponding job aspects increases. Data were collected in 1993 using written questionnaires in two Dutch governmental agencies, one with 32 and the other with 44 employees. These workers' networks were charted using nine name-generating questions.

Social capital, it turns out, is not an all-purpose good but one that is goal specific, even within a single domain of life such as work. Three effects stand out: First, the structure of the network and the content of the ties do matter. Networks of strategic, work-related ties promote an employee's satisfaction with instrumental aspects of the job, like income, security, and career opportunities. Second, closed networks of identity-based solidarity ties improve an employee's satisfaction with social aspects of the job, like the general social climate at work and cooperation with management and colleagues. Third, a network with a bow–tie structure (i.e., where a focal actor is the link between two or more mutually exclusive cliques) generally has strong negative effects on satisfaction with the social side of the job; although a bow–tie type network of trusting ties does increase satisfaction with the social side. This implies that Krackhardt's hypothesis on the unpleasant feelings produced by bow–tie type networks has to be specified for the content of the ties that constitute such

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a network. The most important conclusion of our analysis is that goal specificity of social capital has implications for both *structure* and *content* of social networks. Achievement of a particular goal, such as satisfaction at work, requires not only networks of a certain structure or ties with a particular content, but specifically structured networks of ties with a particular content.

Keywords: Job satisfaction; Social networks; Goal specific social capital

1. Introduction

Job satisfaction has been a focal issue in organizational research for decades. Many studies delve into the possible antecedents of job satisfaction. This paper too discusses antecedent conditions of job satisfaction. At the same time it attempts to build upon some new theoretical and empirical insights provided by the theory of social capital and the analysis of personal networks.

Next to socio-demographic background characteristics of employees, like age, sex, and education, various other conditions have come under scrutiny, including job characteristics like pay, stress factors, and role conceptions; organizational constraints; and employees' psychological needs and personalities (Locke, 1976; Spector, 1997). Studies on the possible effects of job satisfaction on the individual employee or the work of the organization are also numerous. Such impacts are, e.g., physical well-being, psychological health, performance, absenteeism, turnover, and productivity (Thierry and Koopman-Iwema, 1984, p. 154; Spector, 1997).

Regarding individual characteristics as conditions for job satisfaction, there seem to be no large differences in job satisfaction between men and women, although women are generally paid less for doing work similar to men's (Witt and Nye, 1992). Once job characteristics are accounted for, education has no influence on job satisfaction (Martin and Shehan, 1989). Older workers are generally more satisfied with their job, which might be due to their holding better jobs, having more skills, or being more in control of their work (the association, however, does not seem to be perfectly linear but U-shaped, see Brush et al., 1987).

Job characteristics like autonomy, clarity of expected performance, task identity, skill variety, and the like all promote job satisfaction (Fried and Ferris, 1987). Organizational constraints, like insufficient budgetary support or shortage of resources, negatively affect job satisfaction (Peters and O'Connor, 1980). Employees' personalities too have been found to influence job satisfaction, as those with an internal locus of control are more satisfied with their jobs (Spector, 1997).

The original impetus for research on job satisfaction was a humanitarian interest of researchers working in the so-called "human relations tradition". Herein, job satisfaction is assumed to be a basic value that should be attainable for all working people, and provision of agreeable social relations at the workplace is seen to cause workers to be satisfied with their jobs. These researchers were quickly joined by those who took a more instrumental view of the subject and assumed that a satisfied worker is probably also one who works hard and performs well.

Some findings corroborate the humanist view. For example, if employees feel they receive fair pay, they tend to experience more satisfaction on the job. However, the main assumption has hardly been tested, i.e., that agreeable social relations at the workplace make for job satisfaction. Studies conducted by Brass (1982), Hurlbert (1991), Bulder et al. (1995), and Hodson (1997) show inconsistent results. Some of the inconsistencies may flow from differences in measurement or data analysis. Hurlbert, e.g., analyzed personal networks that included non-work-related contacts, whereas the other authors dealt only with work-related ties. According to Hurlbert, cohesive personal networks of similar persons promote job satisfaction, an effect that is augmented as the network members (alters) have more resources, such as education. Using non-network data, Hodson found co-worker solidarity to have positive effects on job satisfaction. Brass failed to find an association between centrality in the network of a work organization and job satisfaction, although several different measurements for centrality were used. In their case study of two government agencies, Bulder et al. found no increase in job satisfaction attributable to number of ties or the density of personal networks at work. Heterogeneity of the network even had a negative effect.

Some of the original basic assumptions have been attenuated by results of empirical research. Job satisfaction is no guarantee for commitment to an organization or the absence of withdrawal behavior, like absenteeism, as was the original straightforward assumption. The association between job satisfaction and commitment to the organization is weak (cf. Lincoln and Kalleberg, 1990) as is the relation between job satisfaction and absenteeism (Farrell and Stamm, 1988). Job satisfaction does, however, clearly decrease turnover (Mitra et al., 1992). The instrumental view experienced a severe setback when job satisfaction was shown repeatedly to be only weakly or not at all related to job performance (see Petty et al., 1984; Iaffoldano et al., 1985; Perrow, 1986). Moreover, the opposite direction of causality is equally feasible. When organizations connect more rewards to good performance, the correlation between performance and satisfaction will increase (Jacobs and Solomon, 1977). A high income as such, however, is not a determining factor in job satisfaction (Spector, 1997).

In general, knowledge on job satisfaction is neither systematic nor consistent. Moreover, no clear mechanism has been specified to help us understand the empirical associations between job satisfaction, its antecedents, and its consequences. Because of these relatively discouraging results, many researchers lost interest in the topic and, for a while, "job satisfaction" was low on the research agenda of organizational science (see Flap et al., 1998). Currently, though, interest is reviving. Job satisfaction is simply too important to neglect, since work is central to society and to many people's lives. Although job satisfaction may not be conducive to job performance, it was recently shown that it has many other consequences, different from those at first expected. Among others, job satisfaction was shown to influence so-called "organizational citizenship behavior", i.e., providing help to co-workers that goes beyond the formal requirements of the job (Organ and Ryan, 1995) and discouraging destructive behavior at the workplace (Chen and Spector, 1992). An important contribution to the re-emergence of the field was made by the publication of several meta-analyses on antecedents and consequences of job satisfaction (e.g., Spector, 1997). Furthermore, new data became available allowing for better inquiry into the issue. Lastly, theoretical and methodological advancements in network research offer new opportunities for gaining insight into the association between social relations and job satisfaction. In

particular, the theory of social capital suggests new ideas on how networks and job satisfaction may be related (Flap, 1999). The main idea is that social capital might be goal specific, i.e., job satisfaction might differ depending on the structure and content of the social network. The remainder of this paper elaborates on and tests a few of these ideas.

2. Social capital, goal specificity, and network structures

Within the theory of social capital, personal networks are considered to be a means to achieve individual goals. Therefore, we call them social *capital* rather than social *resources*, a term that is used to indicate similar phenomena (see Lin, 1992). [1] Networks are a means to achieve goals that otherwise cannot be attained — analogous to the benefits one can derive from one's financial or human capital. Social capital consists of the number of people in a network, their willingness to lend support, and their ability to do so (Bourdieu, 1980; Flap and de Graaf, 1986; Coleman, 1988). Some types of social support, such as providing company, are more or less implied by a relationship (the "content" of a tie), the willingness and opportunity to be together. Other types of support, such as provision of information and advice, also invoke others' resources. They are sometimes called an individual's second-order resources because the focal actor has no property rights on them.

A further dimension of social capital refers to the *position* someone has in the network of relationships. Social capital inherent in the structure of one's network influences the willingness and capability of others to provide help. There are three views on this. One view (Coleman, 1988) emphasizes that a cohesive, i.e., an all-connected, network is a resource to its members. Such a network is expected to promote mutual trust and the willingness to cooperate. A second view (Burt, 1992) stresses that in competitive situations an individual has an advantage over those to whom they are connected but who have no ties to each other. The focal actor then has a minimum of redundancy in his [2] relations and the widest choice of interaction partners. Further, he can play the other actors off against each other. This is the advantage of being autonomous, of having a network with structural holes. A third view was recently formulated by Krackhardt (1999), who emphasized that being the link between two or more mutually exclusive cliques can be unpleasant. Although such a network structure (also called a "bow–tie" structure, c.f. Krackhardt, 1999) might lead to a central position, it may also create a situation in which the focal person is unable to conform to the norms and expectations of the different cliques in which he is involved. It

[1] Although we make the distinction between social capital and social resources, the difference as such is not important to this paper. It becomes substantial only through its consequences for the resulting hypotheses. If social networks are interpreted as social capital individuals are seen as producers of their own well-being, which is a more active stance than the view of networks as social resources. The conceptualization as social capital suggests that persons will invest in ties to the extent that they are instrumental, i.e., promise to be valuable in the future. Moreover, returns on social capital will depend on institutional arrangements. The notion of social resources does not make these suggestions. Further, considering investment in social relationships as goal specific does not imply that there are no unintended effects or by-products of relational investments. The colleague with whom one already works may turn out to be an expert on antique furniture; and one might happen to need advice on this subject. However, goals such as a good position, career, and belonging to a certain kind of community at work are comparably general and we assume that people attempt to realize them.

[2] The masculine form is used for reasons of brevity and readability.

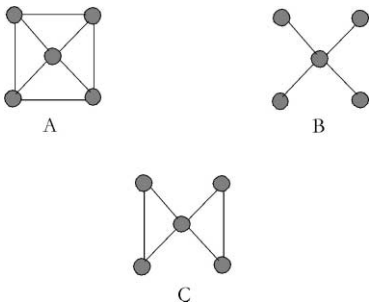


Fig. 1. Social capital in different network structures: cohesive network (A), structural holes (B) and network with separated cliques (C).

is a double-bind: whatever an actor does, he does it wrong and might be sanctioned. Fig. 1 illustrates the three network types that are implied in the three views mentioned above.

The reason why social capital does not always promote job satisfaction might rest in the fact that social capital is goal specific. Litwak (1985) provided an instructive example of goal specific social capital in his study Helping the Elderly: "It takes a strong man to carry an invalid." For social capital and job satisfaction, reasoning might be similar: only a particular type of social capital, a particular content, network structure, or kind of resource the relationships provide, will produce satisfaction with a job.

Social support was recently shown to be a multidimensional construct and we argue that the same holds true for social capital (see Ducharme and Martin, 2000). Different network structures constitute different forms of social capital, depending on what goals the actor wants to attain. For example, when unique information is needed, a network rich in structural holes is an optimal structure, while goals like trusting each other and cooperation are best served by a closed network. In addition, the other dimensions of social capital (i.e., number, willingness, and ability of network members to provide help) suggest that besides network structure, the content of a tie should also be considered.

It might be sensible not only to disaggregate social capital but to do this for job satisfaction as well. Job satisfaction is the degree to which people like their jobs. It can be considered a global feeling about the job or as comprising various attitudes about the *different* aspects of the job. Attempts to discover underlying dimensions suggest that people differentiate four job aspects: rewards, other people, nature of the work, and organizational context. These dimensions are only modestly related to one another (cf. Spector, 1985). Further, research shows that generally employees score satisfaction lowest on pay and promotion opportunities, while they are often more satisfied with the other aspects of their job (Spector, 1997).

Satisfaction with the rewards tied to the job and satisfaction with other people at the job refer clearly to what have been called the most general goals people are looking for in their lives. Following Adam Smith, these general human goals are physical well-being and social approval (cf. Lindenberg, 1990). [3] It can be assumed that most people also aim

[3] Lindenberg (1991) argued that there are three kinds of approval which given circumstances can function as substitutes for each other: status, behavioral confirmation, and positive affection. The first two types definitively require actual social interaction.

to achieve these goals during work and at the workplace. Importantly, social capital at the workplace is a means to both of these goals. However, following the assumption that social capital is not an all-purpose good but a goal specific one, we can conclude that particular forms of social capital are associated with particular dimensions of job satisfaction. Or, more generally, only particular forms of social capital are conducive to attainment of a particular goal.

In sum, our argument is that *different* contents and structures of a network promote satisfaction with *different* aspects of one's job, especially with job rewards and relationships at work. Recently, Podolny and Baron (1997) presented a similar argument on the kinds of networks that are conducive to getting promoted. They argue, "the network structure that is most conducive to maximize access to information and other resources is not the structure most conducive to social identity, and vice versa" (Podolny and Baron, 1997, p. 674).

3. Hypotheses on social capital in different network structures

That cohesive networks (as depicted in Fig. 1, network A) might contribute to well-being is unquestioned. For example, Hurlbert (1991) assumes that cohesive networks of similar others both prevent and ameliorate consequences of stress. In a closed network, communications flow quickly and easily, thus every network member knows the same things. The network consists of many strong ties, which is one reason for its closeness: if actor A has a strong tie to actor B and actor B has a strong tie to actor C, it is very likely that A and C will also establish a strong relationship. Because of this embeddedness, network members are assumed to trust each other. However, to attain more material rewards at the job, like income and career prospects, a person might need a more entrepreneurial network, i.e., a network with many structural holes (see Fig. 1, network B). To accentuate the difference with the social side of the job, we call rewards like income and career prospects the "instrumental aspects" of work and the network that serves these goals the "strategic network".

The more different social circles or contexts covered by a personal network, the greater the range of resources that one can mobilize (Kadushin, 1982). In other words, a network comprised of many similar others limits the different types of help one can obtain. Network "entrepreneurs" will maximize the number of structural holes in their network, which means that linkages between the different circles depend on them. In the pursuit of material rewards, structural holes rather than cohesion will probably be an asset, since the former will decrease the redundancy of the ties. Perhaps even more important in the context of work is access to information through such a network. While a closed network is assumed to bring little news to its members (cf. Granovetter, 1973), a person who has a network with many structural holes can get *more* information, will get information *earlier*, and probably with higher *reliability* because of the opportunity to check accuracy. This autonomy brings other control benefits as well, because focal persons have some leverage to make others act in their interest. As already mentioned, such a network is an especially valuable resource in competitive situations, which are typical of work in an organization where employees are after scarce organizational rewards.

For the social side of a job, mutual approval, cooperation, trust, and solidarity among actors becomes more important. Here, closure (i.e., the density) of social ties between network members can be assumed to increase satisfaction as opposed to an open network with structural holes. The part of the network that is important for aspects related to social approval can be expected to consist of rather multiplex relationships, which are accordingly probably strong as well. As mentioned, we call these aspects of the job the "social side" and the network that serves these goals the "solidarity network".

In a general way, contentment with the achievement of particular goals is the mechanism that connects social capital and job satisfaction. Nonetheless, the mechanisms that produce the association between a specific kind of network structure and satisfaction with the instrumental or the social side of the job can be different. For the instrumental side, the mechanism will be that in a process of social exchange over time a network member (alter) provides instrumental help to repay an earlier service delivered by the focal actor (ego). For the social side, an added — or alternative mechanism — can be that one cooperates so as not to get a reputation of being an opportunist and lose investment in ego and the others in the network.

The arguments on open versus closed networks can be further specified: being a member of mutually exclusive cliques will affect satisfaction negatively in nearly all, but especially in the social aspects of the job, because different, conflicting norms might become more salient with regard to social aspects. This situation, which is somewhat halfway between a network with structural holes and one with closure, will not provide much social capital in the development of job satisfaction.

As a structural effect, we therefore expect an open network rich in structural holes to be associated with satisfaction with what we called the instrumental aspects of the job. Stated more precisely, the more open a personal network, the more satisfied the focal actor will be with the instrumental aspects of the job and the less satisfied the focal actor will be with the social side of the job (H1). We further expect that the more dense or closed a personal network is, the more satisfied the focal actor will be with the social aspects of the job and the less satisfied the actor will be with the instrumental side of the job (H2). There is also a third expected structural effect (H3): the more non-overlapping cliques exist in a personal network, the less satisfied the focal actor will be with the job, in particular, with the social aspects of the job, but also with the instrumental side.

Apart from different network structures, certain kinds of support will be more important than others for the achievement of a particular goal. To attain more material goals, like income, career opportunities, and job certainty, an employee also needs strategic contacts. These are network members who provide help that is instrumental to these goals. Examples are colleagues with whom important matters and developments within the organization are discussed and contacts with "players" who might be able to influence company decisions that affect the focal person. Further, without workplace ties that provide solidarity, cooperation, trusted others, and means to identify with others, employees will be without social approval and unsatisfied with the social side of the job. Consequently, we can formulate the following hypotheses on the association between the content of ties and job satisfaction: The more network members provide instrumental help, the more the focal actor will be satisfied with the instrumental side of the job (H4). And, the more solidarity ties to trustworthy others in a network, the more the focal actor will be satisfied with the social side of the job (H5).

	Dimensions of Social Capital	Aspects of Job Satisfaction	
		Instrumental	Social
	Network Structure		
H1	Open	+	-
H2	Closed	-	+
H3	Separate cliques	-	-
	Network Content		
H4	Strategic, instrumental help (e.g., discussion of important organizational matters)	+	/
H5	Solidarity, cooperation (e.g., trustworthiness)	/	+
	Combination of Structure and Content		
H1s	Open strategic network	+	/
H2s	Closed solidarity network	/	+
H3s1	Strategic network of separate cliques	-	-
H3s2	Solidarity network of separate cliques	-	-

Fig. 2. Summary of hypotheses on network structures, contents and aspects of job satisfaction. Note: + indicates an expected positive effect, − indicates and expected negative effect, and / indicates that no hypothesis is formulated.

Note that the solidarity network and the entrepreneurial network are examined in terms of structure as well as content.

The general argument on the effects of the three kinds of networks can in addition be formulated in more specific, stronger hypotheses, depending on whether the ties that constitute the particular network structure are of a particular content, i.e., have a strategic, instrumental character or are ties to trustworthy others and solidarity-enhancing. In their more specific version, the first and second hypotheses are as follows: [4] The more a personal network consists of strategic ties that are not connected to each other, the more satisfied the focal actor will be with the instrumental side of the job (H1s). The more a personal network consists of solidarity ties to trustworthy others who are connected to one another, the more satisfied the focal actor will be with the social side of the job (H2s). These latter types of networks can be called, respectively, *entrepreneurial* and *solidarity* networks. If social capital is indeed goal specific, these types of networks, which combine structure and content in an optimal way, can be expected to be the most adequate means for achieving individual goals.

The more specific version of the third hypothesis is a twofold statement. The more a personal network consists of instrumental ties to others who are engaged in non-overlapping cliques, the less satisfied the focal actor will be with both the instrumental and the social side of the job (H3s1). And, consequently, the more a personal network consists of solidarity ties to others who are engaged in non-overlapping cliques, the less satisfied the focal actor will be with both the instrumental and the social sides of the job (H3s2). Fig. 2 summarizes our hypotheses on network structures, contents, and networks with a particular structure and content.

[4] A hypothesis is stronger if its information content in the Popperian sense is higher, i.e., if it excludes more possible states of affairs in the real world.

As can be seen in the figure, we expect effects of structure on both aspects of job satisfaction simultaneously, while for network content we do not expect to see effects on both aspects at the same time. Closed or open network structures are seen as double edged: its impossible to work together cooperatively with members of a network who have no contact with each other, and a closed network is an obstacle if innovation is important. However, there is no argument as to why relations that provide trust and solidarity with others should negatively affect satisfaction with instrumental aspects of work and vice versa.

4. Data and measurements

Our data allow us to test our ideas on the goal specific effects of social capital on various aspects of job satisfaction. The data were collected in two governmental agencies in the Netherlands (a more extensive description is provided by Bulder et al. (1993) and by Bulder (2001)). The similarity in institutional context, work conditions, and characteristics of the employees of the two agencies controls for a number of other possible causes of satisfaction and makes it reasonable to attribute differences in job satisfaction, provided they do exist, to differences in networks.

The organizational departments are referred to as organization 1 and organization 2. The task of "organization 1" is to monitor certain budgetary decisions made by other departments. It also has to deal with the consequences of decentralization of tasks and is adapting to a new internal structure. Formerly, there was much more bureaucracy, and employees worked according to hierarchical principles. Nowadays there is a flat structure, designed for flexibility and project-based management. The organizational department that we investigated employs 32 persons. Apart from differences between management and other personnel, there are no longer hierarchical differences. Organization 1 employs civil servants of several professions and some clerical staff. The response rate to the questionnaire was 91%.

'Organization 2' is part of an agency that offers professional consultancy services. Although traditionally its clients were found within the government, it is now taking steps to enter private markets. Apart from the consultants, the organization employs a clerical staff. Employees are located in three branches. The department investigated as organization 2 counts 44 people (23 of whom are consultants). Its management consists of one CEO, three product managers, and two account managers. The response to the questionnaire was more than 90%.

For both organizations, the same questionnaire was used. It contained nine name-generating questions or "network contexts" to delineate the networks (of which eight questions were posed identically in both organizations, see Appendix A). The respondents received a list with all colleagues' names and put checks on the list to indicate with whom they have which kinds of contact. This method saves effort, thus leaving time for additional questions. Following the recommendations by Stork and Richards (1992), we formulated a two-sided question on the advice relation: we asked "Who asks you for advice?" as well as "Who do you ask for advice?" This way of mapping networks helps to overcome the problem of non-response, since the persons who did respond provide sufficient information to assess the networks of non-respondents.

4.1. Measurement of the dependent variables

As said, we consider satisfaction with certain aspects of work an indicator for perceived goal achievement. For various aspects of work, the respondents were asked to indicate their degree of satisfaction on a four-point scale. Table 1 gives the frequencies and means of satisfaction scores for the 16 aspects of work into which we inquired.

The table shows that a considerable number of workers is rather satisfied with the job. However, quite a number of workers is less satisfied with certain aspects or even not satisfied at all. Most employees are satisfied with the autonomy to take decisions, while relatively few are satisfied with the amount of stress and career opportunities. Satisfaction is lowest where career opportunities are concerned and highest if income is considered. The latter, however, is not in line with general findings in studies of job satisfaction. Previous analyses have examined differences in job satisfaction in the two organizations. They found comparable figures in all 16 aspects of satisfaction, with no significant differences between them.

Previous analysis further inquired into whether the 16 items constitute a scale. The scale of 16 items has a reliability of $\alpha = 0.82$. Analyses were also performed using this scale as dependent variable, but conform to our theoretical argument no effects were found.

To see what the underlying dimension of the construct "job satisfaction" would be, we performed a principal component analysis of the 16 items. This resulted in a solution with five different factors, together explaining 70% of the variance. Especially the first two factors come close to a measure of individual goal achievement as discussed in the previous sections. They clearly refer to satisfaction with the instrumental and the social aspects of the job. The first factor consists of satisfaction with the *certainty of the job in the future*, the *utilization of human capital*, *income*, *clarity of expectations*, and *career opportunities*. The

Table 1
Scores on different aspects of job satisfaction in organizations 1 and 2, absolute numbers, percentages in parentheses ($n = 76$)

Extent of satisfaction (item)	1 (not)	2 (less)	3 (fairly)	4 (very)	Mean (S.D.)
Autonomy to take decisions	4 (6.2)	15 (23.1)	25 (38.5)	21 (32.3)	2.97 (0.90)
Cooperation with colleagues	–	10 (15.2)	33 (50.0)	22 (34.8)	3.20 (0.68)
Social climate	1 (1.5)	10 (15.2)	33 (50.0)	22 (33.3)	3.15 (0.73)
Autonomy to decide how to do the work	2 (3.0)	8 (12.1)	31 (47.0)	25 (37.9)	3.20 (0.77)
Kind of work	1 (1.5)	14 (21.2)	31 (47.0)	20 (30.3)	3.06 (0.76)
Certainty	6 (9.5)	5 (7.9)	34 (54.0)	18 (28.6)	3.00 (0.87)
Cooperation with boss	1(1.5)	11 (16.7)	37 (56.1)	17 (25.8)	3.00 (0.70)
Utilization of professional capabilities	4 (6.3)	14 (22.2)	29 (46.0)	16 (25.4)	2.90 (0.86)
Utilization of human capital	2 (3.1)	11 (17.2)	37 (57.8)	14 (21.9)	2.98 (0.72)
Opportunities for training	3 (4.6)	16 (24.6)	33 (50.8)	13 (20.0)	2.86 (0.79)
Income	–	4 (6.2)	48 (73.8)	13 (20.0)	3.10 (0.50)
Job compared to others requiring equal training	1 (1.6)	6 (9.5)	44 (69.8)	12 (19.0)	3.06 (0.59)
Clarity of expectations	2 (3.0)	19 (28.8)	34 (51.5)	11 (16.7)	2.80 (0.74)
Personal recognition	–	17 (26.6)	37 (57.8)	10 (15.6)	2.89 (0.65)
Career opportunities	7 (10.9)	25 (39.1)	25 (39.1)	7 (10.9)	2.50 (0.84)
Stress	–	17 (25.8)	42 (63.6)	7 (10.6)	2.90 (0.59)

latter factor is made up of satisfaction with *cooperation with colleagues*, the *social climate*, and *cooperation with the boss*. The first two of these items together explain 44% of the variance. Other factors consider work characteristics such as pressure at work, autonomy and type of work, and training opportunities. In the analyses the individual factor scores on the first two factors were used as dependent variables, indicating satisfaction with instrumental and social aspects of the work, respectively.

4.2. Measurement of the independent variables

The different *kinds of networks* were delineated using the nine name-generating questions, of which eight were posed identically in both organizations. In addition, one question was included on the general closeness of relationships with colleagues and the frequencies of interactions with these workmates. Appendix A provides the list of name-generating questions. These questions are also regarded as "contexts" in a network or "functions" of a relationship.

Strategic ties are those that provide access to the persons that were named in response to the question, "Considering the last 3 months, did you talk to one of your colleagues with the purpose of influencing a decision that is important for your work? If so, who did you talk to?" For some analyses, we used an alternative question, "Independent of their position, the personality, knowledge or experience of people sometimes typifies the whole department. Please mention maximum of five colleagues whom you regard as important for the department."

Ties to the alters who were named in response to the question "Who are the important others you can count on in times of difficulties?" are considered to be trustworthy or *solidarity ties*.

The degree of closure or *density* of the networks was calculated as the total number of ties divided by the number of possible ties. Density of a network takes into account the extent to which the network members are connected to each other and, therefore, how many indirect ties occur in a personal network. Density was calculated for the whole network, as well as for the nine different contexts in the network.

One might argue that responses to the questions on seeking and receiving advice at work should also be included in the analysis. However, these items do not make a clear distinction between strategic and solidarity network, or, in other words, both aspects of job satisfaction might be equally served. Asking for advice can indicate an instrumental contact, since one merely wants to get the work done. However, friends at work will help each other instantly with difficult tasks. Further, if one has a choice to ask a solidarity contact or an instrumental one for advice, one might prefer the former since status and the risk of loosing status is among friends not as important as it is among other colleagues. Therefore, we did not use advice as a measurement for network content and used the more appropriate alternative (i.e., attempting to influence a decision).

To establish the *openness* of a network, i.e., ego's structural autonomy, and obtain a relatively straightforward measure for the number of structural holes in a personal network, betweenness-centrality was calculated using UCINET IV (see Borgatti et al., 1991). Betweenness measures the number of times an actor occurs in a path between the other actors.

To test Krackhardt's hypothesis on the effect of the bow–tie network structure we established the number of different, non-overlapping *separate cliques* in which a person is a member. We counted the number of cliques with a minimum size of three (again using UCINET IV). Only if ego and alter both mentioned each other was a tie considered to exist. The program provides the matrix of overlap in the networks and the number of cliques in which each actor is a member. Further, we used a program called "sigrpos" for counting triads (see Appendix B). [5]

In many studies, sex, education, and age represent independent variables that are expected to affect job satisfaction. In our data, however, education varies little among respondents. We included age, sex, and a dummy variable for the kind of organization in our analyses as *control variables*. Further, we controlled for the time the respondent already spent in the function, since this indicates the time spent building the network. Finally, we included a dummy variable for managers versus others. All dummy variables are coded 0 and 1. Appendix C presents the correlations among the independent variables.

5. Results

Like much other research, our data found almost no relationship between general network characteristics and general job satisfaction. We first present the results on network structures (hypotheses H1–H3), followed by results on network content (hypotheses H4 and H5), and finally, those on the combined effects of structure and content, i.e., the strong versions of the hypotheses (H1s, H2s, H3s1, and H3s2, respectively). Before doing so, we describe reactions to the different name-generating questions. Table 2 provides the average numbers of alters that were named in response to the different name-generating questions.

Table 2 shows that the networks of advice requested from ego by others were largest. It is interesting to see that networks for ego asking advice are smaller. This asymmetry is probably a bias in ego's perception and not true to reality. For the group as a whole, the numbers for advice given and received should be equal. Seemingly, giving advice is remembered better than receiving advice. Also possible is that individuals see a conversation with others more readily as giving rather than receiving advice. The question on alters with whom one has contact outside of the work context for discussion of issues at work (for instance, telephone calls in the evenings) generated the fewest names in both organizations.

The two organizations did not differ with regard to the average number of network contexts mentioned by the respondents. If one considers the number of times that at least one network member was mentioned from a certain context, or how often a certain network context generated names, there were some differences between organizations 1 and 2. In organization 2 only about 5% of respondents mentioned no alters who asked them for advice, while this was about 30% in organization 1. Further, in organization 1 every respondent had at least one alter for the discussion of organizational decisions and developments, while this was not the case in organization 2.

[5] The program was developed by Tom Snijders, whom we thank for allowing us to use it.

Table 2
Description of data, name generators mentioned per organization ($n = 76$)[a]

Name generators	Means (S.D.)		Without network member (%)	
	Organization 1	Organization 2	Organization 1	Organization 2
Advice: alter asks ego	6.3 (7.8)	7.7 (7.4)	28.1	4.5**
Advice: ego asks alter	4.7 (5.6)	5.9 (3.6)	12.5	6.6
Important others (maximum of five)	3.5 (2.3)	3.0 (2.0)	18.8	21.1
Taking over ego's work	3.7 (4.3)	4.5 (5.5)	15.6	19.7
Talking about organizational decisions and developments	5.1 (3.3)	5.3 (4.5)	0.0	7.9*
Contact outside of work (regarding work)	0.8 (1.5)	1.2 (2.1)	59.4	56.8
Best network advice for successor	5.0 (3.9)	–	15.6	–
Strategic action (attempting to influence a decision)	3.1 (5.9)	1.8 (2.7)	40.6	43.2
Persons ego can count on	4.3 (4.8)	4.7 (3.9)	15.6	20.5
Whole network	13.2 (7.1)	15.1 (7.6)	–	–

[a] *: $p < 0.05$, **: $p < 0.01$ for differences between organizations 1 and 2 (t-test). Average values are inclusive zero-values. One question was not asked in organization 2, as indicated by dash.

Before we test our hypotheses, we present analyses for the two major dimensions of satisfaction, i.e., satisfaction with, respectively, the instrumental and the social aspects of the job, while including only the "control" variables in the models and thus neglecting network parameters. Table 3 presents the OLS regressions. As the table shows, the explained variance in the models is rather small and satisfaction with the instrumental side of the job is relatively better explained than satisfaction with the social side. Considering the instrumental aspects of job satisfaction, being a man and being in the function for a long time contribute to dissatisfaction, while being older makes for more satisfaction. Satisfaction with the social side of the job does not seem to depend on the conditions mentioned.

Table 3
Conditions for satisfaction with instrumental and social aspects of work. Model with control variables only ($n = 76$)

	Instrumental aspects		Social aspects	
	B (S.E.)	β	B (S.E.)	β
Boss (1: yes)	−0.01 (0.40)	−0.01	−0.46 (0.44)	−0.17
Sex (male: 1)	−0.72 (0.30)	−0.34*	0.50 (0.33)	0.23
Age	0.46 (0.15)	0.47**	0.06 (0.16)	0.06
Organization	0.21 (0.27)	0.11	0.42 (0.30)	0.21
Time in this function	−0.06 (0.02)	−0.43*	0.02 (0.02)	0.01
R^2 (adjusted)		0.16		0.06

* $p < 0.05$.
** $p < 0.01$.

Table 4
Conditions for satisfaction with instrumental and social aspects of work, added: structural aspects of networks ($n = 76$)[a]

	Instrumental aspects		Social aspects	
	B (S.E.)	β	B (S.E.)	β
Openness (betweenness)	0.11 (0.04)	0.40*	−0.13 (0.06)	−0.45**
Closure (density)	−0.06 (0.14)	−0.02	0.04 (0.14)	0.05
Separate cliques	−0.14 (0.01)	−0.29*	−0.04 (0.01)	−0.66**
Control variables				
Boss (1: yes)	−0.21 (0.41)	−0.08	−0.64 (0.40)	−0.23
Sex (male: 1)	−0.83 (0.31)	−0.39*	0.68 (0.31)	0.31*
Age	0.47 (0.15)	0.48**	0.07 (0.15)	0.07
Organization	−0.04 (0.14)	−0.02	−0.06 (0.40)	−0.03
Time in this function	−0.05 (0.02)	−0.34**	−0.04 (0.24)	−0.03
R^2 (adjusted)		0.19		0.24

[a] Constant significant in all models.
* $p < 0.05$.
** $p < 0.01$.

5.1. Network structure — network content

In the following step, we inquired whether structure rather than content of a network makes a difference in the explanation of satisfaction. Table 4 shows our results on the effects of network structures; Table 5 shows the effects of network content. In Table 4, the effects of

Table 5
Conditions for satisfaction with instrumental and social aspects of work, added: contents of relationships ($n = 76$)

	Instrumental aspects		Social aspects	
	B (S.E.)	β	B (S.E.)	β
Solidarity contacts (relative number)	−0.47 (0.33)	−0.24	0.84 (0.40)	0.24*
Strategic contacts (relative number)	0.24 (0.09)	0.34*	−0.86 (0.90)	0.12
Advice contacts (relative number)	0.78 (0.52)	0.21	0.12 (0.09)	0.03
Contacts outside work (relative number)	0.61 (0.17)	0.41**	−0.37 (0.20)	−0.24[a,b]
Control variables				
Boss (1: yes)	−0.27 (0.32)	−0.10	−0.25 (0.45)	−0.09
Sex (male: 1)	−0.91 (0.25)	−0.43**	0.59 (0.35)	0.27*
Age	0.45 (0.12)	0.46**	0.04 (0.16)	0.04
Organization	0.21 (0.31)	0.11	−0.44 (0.42)	−0.02
Time in this function	−0.02 (0.02)	−0.17	−0.11 (0.27)	0.08
R^2 (adjusted)		0.43		0.20

[a] Constant significant in all models.
[b] Indicates a one-way test.
* $p < 0.05$.
** $p < 0.01$.

network structures are established across all network contexts or contents mentioned by the respondents. For example, someone's betweenness position was established by considering in all nine network contexts the number of times a vertex occurs on a geodesic. We consider someone's betweenness position (or the openness of someone's network) an important positive predictor for satisfaction with the instrumental side of the job and, as Table 4 shows, the first hypothesis formulated is confirmed (H1). At the same time, we expect a negative relationship for the betweenness position and satisfaction with the social side, which also turned out to be correct. Contrary to what we did expect in our second hypothesis (H2) network closure has no effect at all. In line with hypothesis 3 (H3), the number of separate cliques has a negative effect in both analyses.

In addition to these effects, Table 4 shows that the control factors remain largely the same as shown in Table 3, except for the fact that there is also a significant effect of sex on satisfaction with the social aspect of the job, i.e., males are more satisfied with the social aspects than women.

As Table 5 shows, increased numbers of strategic contacts with those who might be able to influence organizational decisions do stimulate satisfaction with the instrumental aspects of the job. Hypothesis 4 (H4) on the number of instrumental contacts is also supported by the data. A greater number of trustworthy or solidarity contacts, i.e., the number of others that one can count on, does indeed promote satisfaction with the social sides of the job, thus supporting hypothesis 5 (H5).

To gain some idea of the influence of ties that are often included in existing research on intra-organizational networks, we also examined the number of work-related contacts outside of working hours and the number of colleagues to whom one can turn to seek advice. Following our theoretical arguments, providing or receiving advice can be equally related to satisfaction with the instrumental and the social side of the job. Table 5 shows that asking for advice has no significant effect on either dimension of job satisfaction. Contacts outside of working hours, however, do stimulate satisfaction with the instrumental aspects of the job. They also influence satisfaction with the job's social aspects, though the effect is negative and only marginally statistically significant. Note that results with regard to our hypotheses do not change if these conditions are not taken into account.

5.2. Combined effects of structure and content: the stronger version of hypotheses 1, 2, and 3

Hypotheses 1–3 can be taken in a stronger version, reading that a network consisting of strategic ties and with many structural holes has a strong positive effect on satisfaction with the instrumental side of the job, that a network consisting of trusting ties to others with high closure strongly promotes satisfaction with the social side of the job, and that a network of trusting ties but with non-overlapping cliques is detrimental to satisfaction with both the social and instrumental sides of the job. Table 6 summarizes our results on the strong interpretations of hypotheses 1 (H1s) and 2 (H2s). Table 7 presents the results for the strong version of H3 (H3s1 and H3s2).

Table 6 shows that the entrepreneurial network, an open strategic network, has, as expected (H1s), a positive effect on satisfaction with the instrumental side of the job. In addition, it has a negative effect on satisfaction with the social side. The latter effect is very

Table 6
Conditions for satisfaction with instrumental and social aspects of work: entrepreneurial and solidarity networks ($n = 76$)

	Instrumental aspects		Social aspects	
	B (S.E.)	β	B (S.E.)	β
Openness of strategic network	0.044 (0.020)	0.35*	−0.06 (0.03)	−0.26[a,b]
Closure of solidarity network	0.007 (0.02)	0.05	0.012 (0.006)	0.29[a]
Boss (1: yes)	0.25 (0.41)	−0.09	−0.49 (0.45)	−0.03
Sex (male: 1)	−0.73 (0.29)	−0.35*	0.84 (32)	0.39*
Age	0.44 (0.14)	0.40*	0.18 (0.18)	0.18
Organization	−0.15 (0.28)	−0.08	0.27 (0.37)	0.12
Time in this function	−0.05 (0.02)	−0.35*	−0.02 (0.03)	−0.12
R^2 (adjusted)		0.24		0.20

[a] Constant significant in all models.
[b] Indicates a one-way test.
* $p < 0.05$.

small, though. Hypothesis H2s on the closure of the solidarity network, the effects of a highly dense network comprised of trustworthy others on satisfaction with the social side of the job is also confirmed, however, the effects are very small. As expected, the solidarity network has no effect on satisfaction with the instrumental side of the job. Hypotheses 1s (H1s) and 2s (H2s) are thereby confirmed. Effects of control variables that were included in the models remain largely the same as in previous analyses.

Table 7 informs about the role of the network consisting of separate cliques of trusting ties and strategic ties, respectively. As can be seen from the table, a bow–tie structured network of strategic, instrumental ties does stimulate satisfaction with the instrumental side of the job, a finding that falsifies part of hypothesis 3s1. In addition, such networks have no effect on satisfaction with the social side of the job. Hypothesis 3s1 is there again partially falsified. A bow–tie structure in the solidarity network of trusting ties also significantly increases rather than decreases satisfaction with the social side of the job, thus falsifying this part of hypotheses 3s2. Further, the expected negative effect of this type of network on satisfaction with the instrumental side of the job was not found.

The explained variance in the last analysis is not large as such and not much larger than in the two earlier analyses, which examined the effect of just the structure of the network or the combined effects of network structure and content of the ties. Only the regression of satisfaction with the social side of the job on the content of the ties resulted in an adjusted R^2 that is somewhat higher. The variance explained in the analysis of the instrumental parts of the job as well as its social aspects is about 25% in these last tables. If we include other characteristics of the ties, like multiplexity, and enclose the heterogeneity of the network analyses (not shown here) the explained variance increases markedly.

5.3. Contacts with management and colleagues

We also inquired somewhat more deeply into the characteristics of the network members, i.e., the question of whether it matters with *whom* one has a certain relationship, boss or

Table 7
Conditions for satisfaction with instrumental and social aspects of work: networks of separated cliques with strategic and solidarity contents ($n = 76$)

	Instrumental aspects				Social aspects			
	B (S.E.)	β	B (S.E.)	β	B (S.E.)	β	B (S.E.)	β
Separate cliques								
Strategic network	–	–	0.12 (0.05)	0.28*	–	–	−0.29 (0.66)	0.06
Solidarity network	0.35 (0.40)	0.12	–	–	0.10 (0.04)	0.35*	–	–
Control variables								
Boss (1: yes)	−0.26 (0.39)	−0.09	0.06 (0.04)	0.02	−0.22 (0.43)	−0.08	−0.48 (0.45)	−0.17
Sex (male: 1)	−0.69 (0.28)	−0.33*	−0.68 (0.29)	−0.32*	0.55 (0.25)	0.25[a]	0.49 (0.35)	0.23[a,b]
Age	0.46 (0.14)	0.48**	0.44 (0.14)	0.45*	0.13 (0.15)	0.14	−0.06 (0.16)	−0.06
Organization	−0.19 (0.29)	−0.10	0.09 (0.26)	0.04	0.46 (0.31)	0.22	0.45 (0.31)	0.22
Time in this function	−0.05 (0.02)	−0.36*	−0.06 (0.02)	−0.38*	−0.01 (0.03)	−0.07	−0.17 (0.27)	−0.01
R^2		0.26		0.25		0.25		0.24

[a] Constant significant in all models.
[b] Indicates a one-way test.
* $p < 0.05$.
** $p < 0.01$.

colleague. Quite unlike classic Marxist ideas on the effects of labor relations between management and employees, transaction cost economics predicts that agreeable relations with managers will curb opportunism on both sides because they promote mutual trust. Social capital theory, in addition, predicts that agreeable ties between managers and workers will be productive for instrumental reasons. Confirming social capital theory and opposing Marxist ideas is also the assumption that pleasant relations between employees and managers will be associated with pleasant relations among employees. Moreover, we assume that this combination will promote satisfaction with the job.

We were unable to fully analyze the effect of the relationship with the boss, because the variation in the data was too small. For example, only four employees received no help at all from their boss, 35 received help only from colleagues, and 35 from both managers and colleagues. In our analysis (not shown) we could establish a positive effect of ties to colleagues and boss on satisfaction with the social side of the job. In addition, receiving help from both manager and colleagues is better than receiving help only from colleagues. No effects were found, however, on satisfaction with the instrumental side of the job.

6. Conclusion and discussion

Contrary to what would be suggested by the human relations tradition, social capital, social integration in general, does not influence all aspects of job satisfaction. This was already found in earlier research and was corroborated in analyses preliminary to this study. In this paper, we argued that a major reason for this lack of association might be that social capital is goal specific. The results of our analyses indeed suggest that social capital is not an all-purpose good, not even within one domain of life such as work, but is goal specific. Whether employees are satisfied with a particular aspect of their job depends on the kinds of support they receive, i.e., on the content of the ties in their work-related network, as well as on the structure of the network. At the workplace, networks with structural holes lead to satisfaction with the instrumental side of the job and to dissatisfaction with the social side. Networks with separate cliques undermine satisfaction with the social side of the job and are detrimental to satisfaction with the instrumental part of the job. As to the effect of the content of the ties, we found that persons with more strategic ties are more satisfied with the instrumental side of their job, whereas a those with a greater number of trusting or solidarity ties are more satisfied with the social side.

An outstanding result of our research into the returns on different types of social capital in terms of job satisfaction probably is that the combination of a certain type of network structure and a particular content of ties is relevant to satisfaction with a specific aspect of the job. Dense networks of solidarity ties, the solidarity networks, do improve an employee's satisfaction with the social side of the job, although the effect that we found is not strong. Further, open networks of strategic work-related contacts, the entrepreneurial networks, clearly promote an employee's satisfaction with instrumental aspects of the job.

Contrary to what we expected, being a member of separate cliques in a network of trusting ties is not detrimental to satisfaction with the social side of the job; in fact, the opposite is

true. In addition and contrary to our expectation, being a member of separate cliques in a network of strategic contacts has a positive effect on satisfaction with the instrumental side of the job. Thus, the assumed negative effect of a network consisting of separate cliques was found only if the content of these ties is not taken into consideration. Probably, the condition that causes these types of network to have detrimental effects lies in the heterogeneity of content, which might indicate different norms. If only one content is considered, such as solidarity or instrumentality, norms and expectations that are set upon the individual are not conflicting. Therefore, networks of separate cliques have positive effects on job satisfaction if just one specific content is considered. If the content of the relations is not taken into account (see Table 4), networks of separate cliques do have clear negative consequences for job satisfaction.

The implication of our findings is that, as different types of work-related networks lead people to be satisfied with the instrumental or the social side of the job, it is not surprising that they cancel each other out in an analysis on the effects of social integration in networks on job satisfaction in general.

Further, we looked into the goal specificity of social capital in an additional way, by making a distinction between ties to colleagues and to managers. As predicted by social capital theory and contrary to Marxist ideas about labor relations, getting advice from management goes together with getting advice from colleagues. Our analysis also bears out that having advice relations with colleagues as well as with managers does promote job satisfaction, yet only with the social aspects of work.

Of course, there are limitations to our research, and our analyses can be improved in several respects. We have data on only about 70 employees of two organizations. Moreover, we have no data on the more private part of the employees' social networks, i.e., their family and friends outside of the workplace. We also lack data on employees' non-work-related contacts with their colleagues. Podolny and Baron (1997) showed, somewhat contrary to popular notions, that this part of the network is rather important for getting promotions, in particular because it is portable from job to job and from one workplace to another, whereas the work-related network is not, or at least not to the same degree. Years ago Crozier (1963, p. 27) suggested that not work-related ties but ties to the rest of one's personal network promote satisfaction with the job.

In addition, a promising line of inquiry might be to inquire more deeply into the characteristics of the alters in the network, as well as in the different contexts of a network. The results of our first attempt to analyze the effects of advice relations with managers and direct colleagues are interesting. Further, network structures other than those analyzed here might affect satisfaction with the job. For example, in analyses not yet discussed in this paper, we established that networks that branch out (two-step ties disconnected to ego) seem to enhance satisfaction with both the instrumental and the social aspects of the job, irrespective of the content of the ties (cf. Burt, 1990). Our analysis could be further improved by taking the direction of the arcs into account. So far, however, we have not developed hypotheses on effects of reciprocity in these networks. We could, e.g., attempt to develop new hypotheses on effects of solidarity as measured by the existence of cycles in the triads or in wider circles in which ego is involved (see Lazega and Pattison, 1999). The analysis could also be improved by applying network auto-correlation models (see Snijders, 1998).

Lastly, as in many other studies, we implied a causal direction that we cannot prove. We are not sure whether the particular networks that employees maintain at work lead to job satisfaction or whether satisfaction with the job stimulates the growth of such networks.

A general importance of our contribution is that it draws attention to the productive role of social capital at the workplace, a point made by several others but seldom demonstrated empirically (Flap et al., 1998). Fung (1991) argued that networks play an important part in the production and division of surplus. A feature of networks is that they can exchange a surplus of labor for a credit that can be used in the future. This exchange of favors is highly relevant for employers too. If an organization functions according its blueprint, it functions badly (sometimes employees even use punctuality as a weapon). The exchange of favors between colleagues is the "oil in the machine" and there is no difference between the exchanges among employees and those with their managers or employers. Both employees and employers benefit from a well functioning exchange system. Recently, economists experimentally demonstrated that employees work harder as a "gift" to the employer if that employer pays wages above the market price (Fehr et al., 1998).

In further research, attention should be paid to the "shadow of the past": how former investments in social capital explain today's network. The shadow of the future is also important, i.e., for how long in the future do people expect to work together (cf. Flap, 1999). If the shadow of the future is small, e.g., because people work on short-term contracts, they might not develop much social capital and, hence, network effects might not be seen. No social capital, no surplus. Longitudinal research designs do not fit in most research agendas on social networks, but they are urgently needed to further intra- and inter-organizational network research.

The shortcomings and unsolved difficulties should, to our mind, not distract from the most important conclusion of our analysis, i.e., that goal specificity of social capital goes far. The achievement of particular goals, here those are satisfaction with the instrumental or the social side of the job, not only requires networks of a particular structure, or ties with a specific content, but specifically structured networks of ties with a particular content.

Appendix A

Items to delineate the networks:

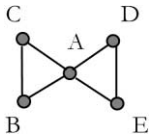
1. Who of your colleagues usually seeks your advice for making a decision?
2. Who of your colleagues do you ask for advice if you have a decision to make?
3. Independent of their position, the personality, knowledge or experience of people sometimes typifies the whole department. Please mention maximum of five colleagues whom you regard as important for the department.
4. Who of your colleagues do you think would be able (because of education, experience, and qualities) to take over your work if you were too busy or absent for a while?
5. Considering the last 3 months, who are the most important people you talked to about current events in and around the department and exchanged ideas on new developments?

6. With which of your colleagues did you have contact concerning work outside of the workplace (such as a telephone call in the evening)?
7. Imagine that you were leaving your job and training somebody else to fulfil your position. What would your advice be regarding the persons your follow-up should ask for help? (This question was asked in only one organization.)
8. Considering the last 3 months, did you talk to one of your colleagues with the purpose of influencing a decision that is important for your work? If so, who did you talk to?
9. Who are the important others you can count on in times of difficulties?

Appendix B

B.1. Counting of subsets of triads

The program "sigrpos" provides lists of all triads in which a particular actor is involved. A structure of overlapping cliques is identified as a particular sequence of triads. For example, if there are five actors in a network like the following one:



the program would give for actor A the following outcome: p-p-p, p-p-0, p-p-p, p-p-0, where p indicates a confirmed tie (only confirmed ties were used), and 0 indicates no tie. Within UCINET the number of cliques in which an actor participates was counted. If an actor is a member of two cliques and a triad sequence like the one above is detected, the cliques were considered a bow–tie structure or a structure of non-overlapping, multiple cliques. For further procedures, both the triad sequences and the number of cliques were transformed into an SPSS data file.

Appendix C

Correlations among the independent variables (1: boss; 2: sex; 3: age; 4: organization; 5: time in function; 6: betweenness; 7: density; 8: number of separate cliques; 9: number of advice relations; 10: solidarity contacts; 11: instrumental contacts (important others); 12: instrumental contacts (influence); 13: contacts cutside; 14: number of cliques instrumental1 (important others); 15: number of cliques instrumental2 (influence); 16: number of cliques solidarity; 17: betweenness instrumental1; 18: instrumental aspects of work (factor scores); 19: social aspects of work (factor scores))

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	–																	
2	0.10																	
3	−0.01	0.40																
4	−0.04	−0.14	0.04															
5	−0.20	0.10	0.40	0.30														
6	0.80	0.21	0.02	0.15	−0.25													
7	−0.25	−0.29	−0.11	0.71	0.23	−0.26												
8	0.64	0.21	−0.01	−0.19	−0.28	0.69	−0.57											
9	0.64	0.22	0.06	0.10	−0.13	0.77	−0.32	0.77										
10	0.43	0.24	0.08	0.04	0.11	0.47	−0.29	0.58	0.47									
11	0.09	0.13	0.10	−0.12	−0.18	0.31	−0.39	0.29	0.18	0.39								
12	0.54	0.30	−0.01	−0.14	−0.17	0.61	−0.42	0.69	0.57	0.69	0.25							
13	0.06	0.05	0.08	0.10	0.07	0.25	−0.15	0.20	0.23	0.25	0.27	0.26						
14	0.63	0.24	0.06	−0.21	−0.24	0.71	−0.45	0.75	0.62	0.55	0.40	0.68	0.12					
15	0.62	0.28	−0.03	−0.13	−0.21	0.65	−0.42	0.73	0.66	0.66	0.21	0.89	0.21	0.76				
16	0.66	0.28	0.03	0.10	−0.11	0.75	−0.27	0.68	0.60	0.80	0.36	0.67	0.12	0.73	0.70			
17	0.53	0.13	0.13	0.26	−0.08	0.61	−0.03	0.29	0.36	0.30	0.34	0.21	0.02	0.46	0.26	0.63		
18	0.23	−0.34	0.38	0.10	0.31	0.23	−0.10	−0.29	0.11	−0.20	0.30	0.25	0.35	0.24	0.28	0.12	0.09	
19	−0.04	0.25	0.04	0.04	0.07	−0.04	0.27	−0.55	−0.12	0.25	−0.11	−0.19	−0.22	−0.07	0.06	0.26	0.29	0.00

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